DISCOVERY

OF THE

CAUSE, NATURE, CURE AND PREVENTION

OF

EPIDEMIC CHOLERA:

BY

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[Reprinted from the New York Journal of Medicine for January, 1855, with an Appendix of new matter.]

CINCINNATI:
PUBLISHED BY H. W. DERBY.

1855.

PRINTED AT THE COLUMBIAN OFFICE.

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TAKING a survey of the human family inhabiting this earth, it is the work of but a moment only, to examine the several agents in the material world that support them in life and maintain them in health: food and drink, atmospheric air, heat, light and electricity, are all.

Medium, or modern impressions of these agents necessary to life, or vital stimulants, maintain a physiological state, or the condition of comfort, buoyancy and happiness, called health. Any other than medium, or moderate impressions, either in force or quality, especially if long continued, induce a pathological state, or a condition of discomfort and tendency to death, called disease. It is to be observed, however, that a considerable variation is compatible with health, especially if neither sudden nor long continued. Man is most comfortable, for instance, in a temperature of about 65 degrees F., but he can withstand 100 degrees if not long continued, or 20 degrees below zero. So of all the vital stimulants, moderation is the law of health. But the earth must wheel its stated course around the sun, producing the phenomena of the seasons; hence, man must be subjected to extreme impressions in summer and winter, and the vegetable kingdom to droughts, frosts and blights, abridging the vital stimulus of food. These are the laws of Nature, and in them are involved the causes of disease. No other external influences are known, or acknowledged to be present in the

physical world, by which the health of human beings can be disturbed, and cannot be admitted without hypothesis.

Discarding all the hypothetical causes of Cholera that may have been offered, such as contagion; infection; epidemic influence; an imaginary entity, possessing the quality of portability; astral influence; malaria, or miasmata, (whether vegetable fungi, or animalculæ); teluric emanations; supernatural agency, called the displeasure of Providence, or the vengeance of God; I look only to known, natural causes of disease, or extreme impressions of the natural vital stimuli, for the cause of Cholera, and a rational explanation of all the phenomena it presents.

Deviations from a healthful standard, in the impression of the vital stimulus of food, or alimentation, constitute one class of causes of disease.

On this proposition I remark, that the natural law, governing man as an *omnivorous* animal, is as imperious as that which has ruled the ox, *herbivorous*, or the tiger *carnivorous*.' Infractions of this law call for a penalty; and it is as much a violation of it to withhold *all kinds*, or a variety of animal and vegetable food and fruits from man, as to stall-feed an ox on meats, or to graze a tiger on clover.

Deviations from a healthful standard, in the impression of atmospheric air, constitute another class of causes of disease.

On this proposition I venture the remark, that this source is most accused, but least at fault. Oxygen is tempered by nitrogen to a suitable medium standard for life and health, and the vegetable kingdom is continually absorbing its accidental impurities, and exchanging pure air: maintaining it in *statu quo*, or at the healthful natural standard. It is impossible for more than merely confined localities to have an impure air, and ventilation quickly corrects the evil.

Deviations from a healthful standard, in the impression of heat, light and electricity, always united, so far as science reveals, constitute a third class of causes of disease: these second and third classes are called meteoric classes.

On this proposition I remark, that the power for good or evil of this class of vital stimulants, as manifested in the annual variations of the seasons, is more remarkable upon the vege-

table than animal kingdom. Man being enabled to heat up his system by oily, animal food in winter, and to avert, measurably, the discomfort of the high temperature of summer, by a diet of cooling, acid fruits, can, by studying the laws of diet, greatly accommodate himself to these exigencies.

Here then, this important matter is narrowed down, and presented to our common sense under three heads, embracing all known external influences in the material world capable of producing disease; and it follows, as a matter of course, that the cause which produces Cholera is to be looked for in one, or in two, of these sources, or in all three united. Now, it seldom happens, according to general observation, that great sickness and mortality occur, without the combined and co-operating influence or agency of these three causes, one acting as the remote or predisposing cause, and the other two as exciting causes. The question, then, naturally propounds itself here, Which of these causes is most probably the remote cause of Cholera?

Looking at the phenomena as presented in the spread of Cholera, the two meteoric classes of causes named, covering high solar heat or insolation, vitiated air, vicissitudes, or sudden changes from heat to cold, and *vice versa*, humidity, rains, gales, tempests, thunder-storms and the barometical phenomena noticed, appear in immediate connection with its outbreaks, progress or aggravation, and are not only generally considered, but are universally held and conceded to be, its *exciting* causes. Hence it follows, that some error in the vital stimulus of alimentation is the *remote* cause of Cholera: there is no other remaining source in the world from whence to derive it.

Forced to this conclusion by sound logic, I would ask in the next place, Does the error in the vital stimulus of food, which produces Cholera, most probably come of a profusion, a poisoning, or a scarcity? All the world will answer the latter; for the poor and destitute are its special victims, while the rich, having means to purchase plenty and variety, though prices be high, and so to fulfill the omnivorous law, usually escape; and under a general poisoning of the food, rich and poor would indiscriminately fall. Furthermore, the

population of a country holds in the ratio of its productions: famine is always followed by pestilence. Hence I am forced again, by universal observation, and the axioms of political economy, to conclude the error arises from an abridgment; and as the vegetable kingdom is most obnoxious to the meteoric influences causing blights, I infer the difficulty lies in an abridgment of the vegetable productions and stores, or a scarcity in kind, leaving the poorer classes on a cheap, stale, refuse, animal, coarse, *one kind of diet* without succulent vegetables.

Glancing now at medical history, it appears that down to near the close of the last century, from time immemorial, a peculiar form of disease, called scorbutus or scurvy, was the great scourge of mankind in all parts of the world, destroying more lives than all other causes of death put together, wars and accidents included. The same mystery enshrouded its nature, its cause, and its spread, that now hangs over Cholera; the same bewilderment and confusion prevailed at the bedside; all the causes that have been conjectured to produce Cholera, were conjured up, marshalled, and arrayed under plausible, specious and imposing hypotheses, and set down by their respective advocates as the causes of scorbutus; but at last, the simple truth forced itself upon the world, that the cause of scurvy was some error in the vital stimulus of food; and it is now well enough ascertained, that the error consists in the absence of succulent vegetables; let these be wanting or even but partially wanting, for any considerable length of time, and, no matter what the diet in other respects, scurvy will make its appearance. (*Budd.*) A return to the free use of succulent vegetables and fruits, and this course pursued, will arrest and cure the disease. For the last sixty years this disease has been measurably and apparently banished, or so held at bay, or modified by the inculcated free use of succulent vegetables, fruits and their juices, that it is not known or recognized when it does make its appearance, and its presence is not dreamed of, when but partially developed, although a whole community, municipality or nation, may be under its power and evil influence, and all forms of disease dreadfully aggravated by its presence.

"We have seen," says Dr. Budd, "that the approach of scurvy is gradual, and that prolonged abstinence from succulent vegetables is necessary for its full development; but it is our opinion that something short of this, that a condition which might be correctly designated a scorbutic taint, must often occur in the lower classes in towns, but especially in prisons and asylums, towards and at the close of long winters, when succulent vegetables are scarce and expensive. Such a condition of the system would necessarily modify the character and course of supervening acute diseases; and it is worthy of most diligent inquiry, whether that form of scarlatina denominated *maligna*, and analogous types of other eruptive diseases, may not, in some cases, owe their peculiar aspect and character to the circumstance of a scorbutic taint already existing, when the system becomes subject to the specific poison of these several diseases. A fact which renders this probable is, that these types prevail most during and at the close of long winters. We may here notice the extraordinary prevalence of typhus in the severe winter of 1837-38, and the petechial character of that epidemic. Sir Gilbert Blane has remarked that the low spotted typhus is always most prevalent in long and severe winters. Willan also states, that the malignant form of scarlatina is usually limited to the winter months. The following paragraph, from Huxam's essay on small-pox, may also bear on this subject: 'I have never observed either the *vegetable or mineral acids* of any great service in the crude crystalline pox, but I have often found them highly useful in the *small black confluent kind*, with *petechiæ*.' It appears to us, also, that by the common practice of physicians in many chronic diseases, patients are kept far too long a time on a diet consisting of farinaceous food. When a moderate use of succulent vegetables is considered prejudicial, it would be advisable to supply the patient with their equivalent, namely, a certain proportion of orange or lemon juice." (*Tweedie's Practice.*)

Thus the experience of Dr. Budd, and others, fully confirms the observations of the writer, that scurvy underlies and aggravates all forms of disease, that are developed towards the close of winter and through the spring, and,

according to the writer's experience, through the summer months also; for he has particularly noticed the great aggravation of midsummer bilious fever and cholera-infantum epidemics, after long, cold winters, and retarded springs, for the last twenty years, as an invariable result or coincidence.

The outbreaks of scorbutus, then, *per se*, as well as its more hidden and complicated manifestations, follow cold winters and retarded springs; yet its pernicious influence is felt, more or less, particularly among the poorer classes in cities, every spring. It generally begins to show itself during the interregnum of vegetable supplies that occurs between the going out of old and coming in of new or fresh stores, develops into epidemic form under solstitial influences acting as exciting causes, and recedes in autumn, or as abundant supplies of fresh vegetables and fruit greet the markets, and their plentifulness reduces prices within the limited means of the poor.

These laws of scurvy are explained by the facts, that severe and protracted winters always frost and greatly abridge the vegetables and fruits in store; that they are generally preceded by summers of great heat and drought, which abridge production; and that, added to these evils, they weaken or debilitate the systems of all, by a prolonged low degree of the vital stimulus of heat, together with foul air within doors, confinement, or want of proper exercise; and these co-operating causes, pressing with greatest severity upon the poorer classes, whose diet consists of the coarsest and cheapest kinds of stale meats and breadstuffs, with pease and beans, at best, for vegetables, when the summer heat comes on, with other depressing and disturbing meteoric influences acting as exciting causes, epidemic scurvy is the result; and nothing but the abundance of autumnal supplies of succulent vegetables and fruits will restore the public health.

Placing these historical facts in connection with the preceding logical deductions, the human mind is compelled to yield assent to the adequacy of the cause assigned for the effect produced; and when it is considered how true must be

the adage, "there is nothing new under the sun," in the laws of Nature; I am forced to the conclusion, that *Cholera is but a modified form of scorbutus*, or a younger sister-scourge of the same parentage; probably better expressed by calling it a hemorrhagic termination, or a manifestation of the dying phenomena of scorbutus.

I must either adopt this rational philosophy, or accept the most improbable alternative, that Cholera is a *new disease;* and lingering still on the confines of the history of scorbutus, I find its ever Protean character; its ever changeful, chameleon dress; its ever insidious, insinuating, stealthful invasion of masses of mankind, peculiarly situated; its ever misleading manifestations, strange vagaries, and anomalous phenomena; perfectly answering and solving the matter, if I cut myself loose from the dogma, that Cholera has other and a specific cause, and adopt this innovation in etiology, that Cholera is nothing but a symptom of scorbutus—a serous hemorrhage from the petechiæ, or lesions of the mucous membranes of the stomach and bowels.

The reasons drawn from observation, for believing Cholera to be of scorbutic character, are as follows, to wit:

1. The coincidences of cold winters and retarded springs preceding its outbreaks. It is a matter of history that the winter of 1831–32 was one of the coldest winters ever known. The rivers and harbors of the United States were frozen from November until April, and winter was literally found lingering in the lap of May. The preceding summer was one of great heat and humidity, rains, floods and deluges. Reasoning from the intensity of these meteoric influences throughout the United States, the crops must have been distressingly abridged; the stores of succulent vegetables and fruits extensively frosted; and prices exorbitantly high in the spring of 1832. Under the operation of these causes of scurvy, active in the highest degree, when the summer heat of June of that year struck the United States, the Cholera broke out in New York and other cities and large towns, and raged until the scorbutic subjects were slaughtered, and the public health was repaired by the ripening and free use of vegetables and fruits. Unfortunately for the state of the public health

during that season, fruits and vegetables were interdicted by medical opinion, the notion gaining almost universal credence that they were exciting causes of Cholera, which opinion has ever since prevailed in the United States.

The same constitution of seasons, I am informed by an intelligent English gentleman, prevailed in Great Britain in 1831–32, and accordingly the Cholera broke out in London, and other large cities and towns of the Kingdom, and also in Paris and other cities of France.

Not to undertake to pursue the cause through blights, by tracing it on the back track through Prussia and Russia, the year preceding, and so on to India, suffice it to note that its outbreaks and spread in America were governed by the laws that are known to govern scurvy, the date of its advent in the cities on this continent answering to the relative intensity of the causes of scurvy that should have been, and doubtless were, present to call it into action. It broke out of priority, as it should have done, in Quebec, (the colder the country, other things being equal, the more intense the causes of scurvy,) on the eighth of June; on the tenth at Montreal; a little later at Kingston; and so on in its south-west course, up the lakes, to the Valley of the Mississippi, into successively warmer regions. It appeared in New York on the twenty-fourth of June; at Albany, where poverty and destitution were less intense, though the latitude is higher, on the third of July; at Boston, also later, for the same reason; at Philadelphia on the fifth of July; and at Baltimore a few weeks later, and so on.

It made its appearance partially again in the year 1834, in the cities of the United States, after a rather cold winter, and surely the most frosty, blighting spring within the memory of the oldest inhabitants. All the fruits nearly, apples, pears, peaches, plums, grapes, currants, gooseberries, etc., were blighted by a chilling frost that occurred about the middle of May. The peaches, apples, etc., of the size of sparrows' eggs, fell from the trees. The very forests put on an autumnal gloom. When solstitial influences came to bear upon this preparation of the systems of thousands of the poorer classes, always most predisposed, the Cholera

broke out with considerable severity in various cities of the United States. The fact was noticed, that it seemed to rage more fiercely again in the same cities where it was most severe in 1832, and where, no doubt, the causes of scurvy were most intense, and where, besides any influences of topography, the citizens were schooled and trained in the prohibition of vegetables, fruits and greens; and the country people not finding ready sale for these products, their culture was neglected, and they were deterred from marketing them through fear.

Again, the winter of 1848–49 was a remarkably cold winter all over the United States, the spring of '49 greatly retarded, and all degrees of the scorbutic diathesis were observed at the bedside by the writer of this, who had for years been an observer of its stealthful, annual appearance. The universal spread of Cholera in the cities of the United States, in the summer of 1849, is well remembered, and its continuance until the coming in and use of the new crops of vegetables and fruits. Their free use, however, during the prevalence of Cholera, has never been known or tolerated. They have rotted in the field rather. It has been held fool-hardy or tempting Providence to eat them.

Casting a glance across the Atlantic, the years 1846–47 were years of dearth, scarcity and blight in Europe, particularly of the potatoe, the most valuable anti-scorbutic vegetable known; and the scurvy and Cholera together followed, scourging the nations generally. Writers in describing the spread of Cholera in Europe in 1847, say, substantially, that it started from India again, early in that year, passed through the cities of Persia, and those along the shores of the Caspian, reached Astracan in July, and appeared at Moscow, faint and weary, in the fall, where it took a refreshing sleep through the winter, but woke up in June, 1848, much refreshed and invigorated, and pursued its travels *via* St. Petersburg, Berlin, Hamburg, etc., to Edinburg and London, where it arrived in November, *en route* for Paris. It is worthy of remark, that it struck England again, in her weakest and most scorbutic point, her Newcastle coal mines, and foul holds of her coal vessels; and that, prior to its

reaching France, the *cause* of it set sail from Havre for America, in two emigrant ships that sailed in October and November. In the October ship it broke out when sixteen days at sea; and the emigrants were landed at Quarantine, in New York, in November, and the disease spread through the Quarantine Hospital, where the sickly, scorbutic inmates were kept on a routine dietary, and whose cup of affliction was made to run over through panic and an increased accumulation of foul air; and a few cases occurred among the emigrants that went to the "Five Points," in the city of New York, where, however, it could make no progress, because of the abundance of fall fruits and vegetables, so it again slept through the winter, the intensely cold winter that followed. In the other ship it broke out when twenty-six days at sea, the *cause* in the emigrants having been more subdued before embarkation, by autumnal fruits and vegetable, than in those of the other ship, which sailed a month earlier; and the passengers were landed at New Orleans in December, where the disease spread among emigrants and the poor, the weather, for the season of the year, being hot, and a further reason, potatoes in the south scarce; and it continually appeared on the Mississippi in steamboats, among emigrant passengers, all winter, and in the river towns as high up as St. Louis and Cincinnati, and established itself gradually in the ports further and further north, as potatoes and succulent vegetable stores failed, and warm, debilitating spring weather came on.

In the summer of 1849, as observed, it broke out generally in the cities of the United States. Now in all these movements, or rather outbreaks, in Asia, Europe, on the Atlantic Ocean, and in the cities of America, it obeyed the laws of scurvy, and was rendered active in proportion to the *remote* and *exciting* causes of scurvy present; and the emotional, exciting cause of *fear* or panic must not be overlooked.

The more partial epidemic of 1850 is to be explained by the more partial abridgment of vegetables and fruits, in various localities, owing either to blights, the withdrawal of labor from production during the sickly summer of 1849, or the false doctrine that vegetables and fruits are injurious;

probably all combined. The scurvy was noticed again by the writer at the bedside in 1850, and it broke out in the Commercial Hospital of this city in July of that year, while the Cholera was raging here. (*Western Lancet*, 1851.)

The Cholera manifested some activity again in the summer of 1852, after another very severe winter, and a previous summer of great heat and drought, in various localities in the United States. The summer of 1852, however, was a cool one, in the main, and the exciting causes of Cholera, therefore, not powerful. Its ravages at Maysville, Ky., Wheeling Va., and sundry other points in the Mississippi Valley, are matters of history, and can only be accounted for on rational principles, by tracing the cause to the constitution of the previous summer, abridging production in the localities surrounding the cities and towns where it raged, and the inclemency of the winter, frosting the vegetables and fruits in store. Finding that the conclusions drawn are all the way thus far supported by facts, the coincidences of cold winters, and the causes that produce scurvy, and that during other years there have been no epidemic manifestations of Cholera, the argument seems a good one and worth pursuing.

Applying the same theory, the want of succulent vegetable food, to the rather general prevalence of Cholera in the cities of the United States this season, 1854, a rather intense causation is found, of general application, in the extravagantly high prices of provisions during the present year, high prices not only betokening scarcity, but being the same in effect to the poor. I notice the fact in the public prints, that scurvy and Cholera were both found raging simultaneously in the Poor-house at Buffalo this summer.

Thus the coincidences of cold winters and retarded springs, preceding the outbreaks of Cholera in the United States, its vernal appearance, solstitial ragings, autumnal recessions and wintry slumbers, together with its uniform and close communion with scurvy, prove that it is produced and governed by the laws that produce and govern scurvy. Doutless, if the statistics were at hand, that the meteoric phenomena and constitution of the seasons could be appealed to through-

out Europe and the world, the spread of Cholera would appear as the effect of cold winters, droughts, frosts and blights, in all places wherever it has prevailed, and that its ravages would be found in the ratio of the intensity of the causes, remote and exciting, that produce and develop scorbutus.

2. The classes of persons who are the victims of Cholera, are those subjected to restrictions in diet; to a routine dietary; to a poor diet; to inactive habits and to confined, foul air; as soldiers in barracks and camp; sailors and boatmen; emigrants or ocean passengers; inmates of poor-houses, hospitals, asylums and prisons; inhabitants of beseiged cities; dwellers in all filthy, poverty-stricken, God-fosaken localities of cities; immigrants just disembarked; laborers on public works; and the poorer classes in cities—precisely those who, from time immemorial, have been the victims of scurvy.

3. Admitting Cholera to be of scorbutic character, all the strange vagaries, attending its history and spread admit of rational explanation, to wit: its home and habitude in burning India, where the poor live on rice, any one kind of diet without succulent vegetable being sure to produce it; its flourishing in frozen Russia, where the serfs feed on train oil; its march with armies, where the dietary is pork and beans; its breaking out at sea, without the possibility of contagion causing it, where the emigrants live on ship-bread and salted meat; its special regard for immigrants just disembarked, crowded into filthy apartments in confined localities of cities, their blood rendered still more and more scorbutic, by a continued cheap dietary of pork, bread and beans; its recession in autumn, dormancy during winter, vernal reappearance, and summer ravages; and its intensity being in direct ratio to the causes that produce scurvy. In fine, there is not, within the writer's knowledge, a circumstance or anomaly in the history or spread of Cholera, that cannot be rationally explained by assuming the disease to be modified scorbutus.

On this assumption it is not only rational but quite explicable, that one family having lived through a cold winter and spring without succulent vegetables, should die the following summer of epidemic Cholera, or whatever form or

modification scurvy may take on, it having always been of Protean character, while the neighboring family, having subsisted chiefly on potatoes, should all escape attack; that the feeble and panic-struck should fall first; that the first cases should appear to be the most malignant and die on shortest notice; that a sudden change of food, even vegetables, and boiled cabbage in particular, should appear to produce it; that great summer heat, sudden changes of weather, foul air, etc., should develop it into epidemic form; that it should differ essentially from Cholera morbus; that it should leap from city to city, and let country people generally go free who raise, store, and consume abundance of potatoes, turnips and other vegetables, apples, peaches and other fruits, and only send their surplus to market; that it should give New England almost a *carte blanche*, where pot-luck and apples and cider constitute the winter and spring dietary; that it should travel, apparently, as we have seen it described by the date of its outbreaks, in the commercial thoroughfares, along rivers, canals, lakes, etc., and prove most fatal in the cities along those low, flat, cold, damp localities, as Chicago, Sandusky, etc., in which localities vegetables and fruits are not only scarce but of indifferent quality, and the co-operating causes of scorbutus powerful; that a villager not remote from one of those cities, whose vegetable stores had been frosted, on visiting the city when Cholera was raging, should overtask himself in the hurry of business, eat little or nothing through fear and anxiety, sleep disturbedly, see the corpse of one dying of Cholera that night at the hotel, leave for home before breakfast, reach home perfectly exhausted, be taken with Cholera, and die before next morning, two or three of his family and sundry potatoless neighbors "catch it," and follow in quick succession, and a potatoe and turnip, beef and cabbage eating farmer-neighbor hard-by, lay out all the corpses, and not "catch it;" that after killing off the constitutionally feeble, and those who had transgressed most by not eating vegetables, the epidemic should decline, and as vegetables and fruits came in and were more eaten, the later cases should become milder and more manageable; that persons flying from a city or locality

where the Cholera was raging, should, some of them, be attacked, in whatever locality sought, no matter how high, mountainous, rural or healthful the place, or pure, cool and bracing the air—the cause being in their own veins.

I notice in the *Galena Jeffersonian* newspaper, that the Cholera lately broke out among three hundred laborers on the railroad near Galena, Illinois, quartered on Scale's Mound, four hundred and fifty feet above the level of the Mississippi, the ground dry, the air pure, and no cause to be assigned for its appearance. The laborers were scattered, and down to the date of the notice, over one half of the number had died at the various points reached. The question is asked, "Who can give an explanation of the cause that produced such terrible results? Such results perplex medical science, and put at fault all theories in regard to the phenomena of Cholera."

On this I remark, that, assuming Cholera to be a modified form of scorbutus, nothing is easier of explanation than the above awful catastrophe, and every similar result that swells the catalogue of this pestilence, so perplexing to medical science and contradictory to false theories. There are, comparatively, no vegetables and fruits raised in all the mining regions round about Galena, to my personal knowledge, and the scorbutic diathesis is so common a phenomenon there every spring season, that it would be remarkable if absent a single year, and a miracle, almost, if absent this year of exorbitant prices. The contractor having those three hundred laborers under his care, had quartered them high and health fully, which fresh air of heaven cost him nothing, but when it came to paying out four or five dollars a bushel for three hundred bushels of potatoes a month, the case was different; besides, the potatoes, or other succulent vegetables, were not to be had at any price in all those regions in May, June, and July; and those three hundred laborers had lived on pork, and beans, and bread, until, prostrated by midsummer heat, modified scorbutus or Cholera broke out; and it broke out in them wherever they went, and slew them as transgressors of the omnivorous law, it mattered not where, whether in the temple of Hygeia, or the garden of Eden:

the transgression had been committed, and the penalty was sure to follow. Nothing short of a potatoe-patch might save them at that juncture, or an orange grove, which they were sure to miss in all those regions.

Thus, all difficulties vanish, darkness gives way to a fullness of light, every thing is explained on rational principles and by the natural laws—Cholera is in the *system* and not in in the *air*, laid there, or produced by violating the law of kindness constituting man Omnivorous, by which his happiness is so much exalted and enhanced: but the law must be fulfilled or the death-penalty will follow. With this key explaining the cause, the nature, and the phenomena attending the outbreak and spread of Cholera, it would now appear mysterious if the phenomena were different and the disease pursued any other course.

4. The phenomena of Cholera at the bed-side, with this key in our hands, reveal so plainly the pathognomonic symptoms of scorbutus, that after rubbing the eyes a little, the better to see through the drapery of some false appearances, every pathologist will discover a full length portrait. The great leading phenomenon is *diliquescence*, or a tendency to the liquefaction of the system. Vomiting and purging are but the proofs of what I say, mere accidents. The serum of the blood is thus being passed off. The solids are dissolving and keep up the currents through the bowels and the skin. So in scorbutus, the dissolving of the solids is the prominent feature: hemorrhage, diarrhœa, salivation bear witness. Hemorrhage of all the constituents of the blood is common in scorbutus, hemorrhage of serum only *generally* takes place in Cholera, the structural lesions of the mucous tissues being less deep. The vital powers are at the lowest ebb in both instances, and great emaciation, sudden death, and clearness of intellect till the last, fill up the measure of the leading phenomena in both. Furthermore, cases of Cholera now and then occur where there is neither vomiting nor purging, the mode of death being precisely as in scurvy, after hemorrhage or other shock, the phenomena being sinking, prostration, dyspnœa, gasping, jactitation, and death, with

clearness of intellect to the last. The difference in the symptoms all told, is never half so great or apparent as the difference between the ordinary symptoms of ague and fever, and pernicious fever or congestive chill, which all pathologists hold to be the same disease, produced by the same cause.

5. The anatomical characters in Cholera are not less positive in declaring the identity of its pathology with that of scurvy. The great structural lesion which dissection reveals, is *disintegration*, and in particular of the mucous tissues. The epithelium is detached from the internal petechial spots, and passed off by the diarrhœa, constituting the white floculi in the dejections; or it is vesicated in extensively papillated patches; or abraded, but adherent in agglutinated coatings; and these morbid appearances extend not only throughout the gastro-pulmonary, but the genito-urinary branches of the mucous membranes; and patches of *ecchymoses* are often found in the mucous linings of the bowels, and a chocolate-colored fluid as their contents, denoting the oozing out of red blood; and "almost all parts of the body, the brain and spinal marrow, the substance of the heart, the abdominal viscera, the limbs, even the spongy substance of the bones, exhibit signs of venous congestion, and *large ecchymoses* are frequently found in all the parenchymatous glands." (*Wood.*) Now, not to lengthen this article by quotations, precisely the same characters are not only present in scorbutus, but they constitute *the main lesions of structure*, as every pathologist must bear witness, and the ecchymoses spoken of extend very often to the skin, constituting the petechiæ and patches of purpura, so frequently noticed.

6. The curative and preventive effects of anti-scorbutic treatment in Cholera, in 1849 and '50, furnished the hints that have led to the investigations which have established the writer's present convictions and conclusions. It will readily be believed therefore that there was some degree or tangible amount of testimony in this way at the bedside, enough, at least, to set the writer thinking, reasoning, reflecting and inquiring. Most, though not all, of the discoveries in Medicine have come in the same way. Some have been the result of the inductive mode of reasoning.

The curative virtues of strychnine in paralysis were interred from *a priori* reasoning on its physiological effects.

Although scorbutus and Cholera were seen complicated, as then supposed, and domiciliated together "cheek by jowl" in 1849 and '50, in Chicago, where the writer was then practicing, and anti-scorbutics were freely administered, and their happy effects witnessed from day to day, continually, in fact, throughout both epidemics, still they were never relied on *exclusively* after the patient was stricken down, for the reason that the writer had then no theory on the subject. The calomel, sugar of lead, and morphine treatment was always combined, or some other empirical resort. The scorbutic diathesis was distinctly seen for many weeks prior to Cholera becoming epidemic, and was treated alone and complicated with the various forms of vernal diseases. In looking back from the writer's present visions of the nature of Cholera, upon the chain of evidences through which clearness of views has come, it is a matter of surprise now that his conclusions should not have been earlier drawn, but such is the "magic of a name," and so powerful are imbibed dogmas in medicine, that the human mind is not left free to interpret rightly the phenomena seen at the bedside.

The anti-scorbutic remedies which the writer now sees were effectual on account of their anti-scorbutic virtues, were the common salt emetic, (chloride of sodium,) which he was continually in the practice of administering as a first remedy, and soda powders throughout the attack. The soda powders were indifferently composed of the bicarbonate of potash or soda, and citric or tartaric acid. The salts of potash and soda, and the vegetable acids named, stand at the head of the list of anti-scorbutic remedies, and the reputed efficacy of common salt in arresting hemorrhage also further explains its value in Cholera. These views also throw light on the success that has attended the saline treatment.

The preventive relied on was punch, (lemonade dashed with brandy,) with five or ten grains of quinine to the quart, and when diarrhœa was present, a grain of morphine was added. This combination was relied on from having observed

scorbutus complicated with vernal agues, and midsummer bilious fevers in the malarious districts of Illinois for nearly twenty years, especially after cold winters, and from the further observed fact, that Cholera delighted in the same localities, particularly along the Illinois and Michigan canal. The writer could go on and specify numerous instances of the prophylactic effects of the remedy, in families where, one or two members being struck down with Cholera, the balance were put under the daily use of the mixture and anti-scorbutic diet, and escaped attack. Though nearly prostrated by a scorbutic taint, and not as generally expressed by that cloak for our ignorance, the senseless phrase "epidemic influence," their strength and spirits would revive, their tongues become clean, their cholerine cease, their appetites return, and an array of evidences as strong as Holy Writ proclaim their salvation from Cholera by means of the anti-scorbutic preventive.

7. The analysis of twenty cases of Cholera observed at Pittsburg, Pa., on the 25th and 26th of September, 1854, chiefly in the Mercy Hospital, contains the crowning testimony that removes all doubt of the correctness of the writer's views, reduces the matter to certainty, theory to knowledge, and incorporates this discovery into the pages of medical literature among the established truths of medical science.

On or about the 15th of September instant, the Cholera broke out at Pittsburg, Pa., and continued to increase in force for some eight days. On the 23d the writer repaired to said city, and arrived there late on the evening of the same day (Saturday,) and found the epidemic had begun to decline. The city proper was the chief locality that suffered. In a former visitation the town of Birmingham, south of Pittsburg, across the Monongahela river, suffered most.

The epidemic commenced with great suddenness, after heavy showers of rain with thunder and lightning, and the sinking of the mercury in the thermometer from 90 degrees to 65 degrees F. in a single night. It broke out that night in every ward in the city, showing conclusively that it obeyed some law other than that of contagion or portability. There had occurred some half a dozen cases at the south-

west end of the city prior to that night; but on that night forty cases or more occurred in the most widely scattered manner. It struck down the feeblest member or members of whatever family it touched, and about three-fourths of all who perished during the epidemic were women—principally mothers. It did not spread through or destroy whole families as it often does, but seemed satisfied to take the weakly and debilitated only. It increased in force for something over a week, say ten days from the first reported deaths, when the mortality reached to over one hundred deaths a day, in a population of some 60,000 souls. The crisis of the epidemic occurred under an equable temperature of about 70 degrees F., and the abatement or decline was rapid, the weather holding pleasant.

The topography of Pittsburg is such that the extremest impressions of heat and cold must inevitably rest on the city proper. Other things being equal therefore, Cholera should break out there before either in Birmingham or Alleghany City. The city proper, lying in the forks of the Alleghany and Monongahela rivers, is of the shape of an obtuse heater, or spread fan, with the point south-west. The surface rises to hills soon north-eastwardly, so that the sun's rays at two o'clock, P. M., are direct upon the face of the city. Underneath the hills skirting either river, is a narrow strip of low ground, and the strip along the Alleghany, bounding the city on the west, constitutes the fifth ward, and is exposed to the direct rays of the whole afternoon sun, and reflection from the cut and quarried hills back of it, heating it like an oven. This ward is populated wholly by the poorer classes and operatives in the iron manufactories. The Cholera was ten to one the most severe and fatal in this ward. Still it raged on the high grounds of the city also, which lack not for direct insolation, and are most reduced in temperature by upward radiation and cooling breezes at night. Alleghany City and also Birmingham are more protected by the hills from the direct rays of the sun than Pittsburg, and Alleghany City in particular appears to enjoy a further advantage, in its better adaption to the culture of vegetables and fruits.

Having ascribed the general prevalence of Cholera this season to the exorbitant prices of provisions, I will here present the prices of the Pittsburg Market, furnished me by Mr. C——, proprietor of the Monongahela House. "Beef, 11 cents per pound; mutton, 8 cents per pound; lamb, 75 cents per quarter; chickens, 31 to 50 cents per pair; butter, 45 to 75 cents per pound; eggs, 14 to 20 cents per dozen; Irish potatoes, $2.50 to $3.00 per bushel; sweet or Carolina potatoes, $2.50 per bushel; tomatoes, all very bad, $1.50 to $2.00 per bushel; corn, (roasting ears,) 25 cents per dozen; onions, $1.25 per bushel; turnips, none in market; apples, $1.50 per bushel. Large quantities of diseased potatoes were sold in market just before the breaking out of Cholera at $1.25 per bushel. Vegetables generally have been poor."

I visited the markets on the morning of the 26th, and passed through two large and commodious houses, well supplied with choice meats, but not a potatoe, turnip, tomato, or other succulent vegetable, apple, peach, or other fruit of any description whatever, on sale or to be seen at either market. This is a more forcible commentary on the power and influence of medical opinion for evil than could have been anticipated. It shows very clearly that the prohibition of vegetables and fruits has not been overestimated by the writer as an unfortunate blunder of the profession, protracting and aggravating every epidemic visitation of the disease.

Case 1.—Monday, September 25, 9 o'clock, A. M., through the courtesy of the Board of Health, visited, with Dr. ——, a middle-aged German woman in the fifth ward, in the collapsed stage of Cholera—the patient speechless, pulseless, senseless, and cold as in death. The case had had no treatment. On examining the mouth, the objective signs of scorbutus were found most unequivocally manifest in a puffy and livid condition of the gums, pale flabby tongue, especially towards the edges, which bore the impressions of the teeth. This was considered a hopeless case, but the punch, with quinine and morphine added, was prescribed, as the patient was not past swallowing. The case terminated fatally in a few hours, and was only instructive as affording testimony of the presence of the scorbutic diathesis in the patient.

On examination of the other members of this family, six in number, all showed the objective signs of scurvy in different degrees, by the crimson line along the dental margin of their gums, their tongues furred centrally, and pale and smooth laterally, paleness of countenance, inertia of feelings, despondency and dejection of spirits. One suckling woman in particular, exhibited the signs of the scorbutic diathesis most prominently of all. They were enjoined to drink punch daily, and to make a free use of vegetables and fruits in their dietary.

Case 2.—Mrs. O'Connell, a young married Irish woman, living in Miltenberger's Alley, was visited at half-past 9 o'clock A. M. She had had a diarrhœa of two days' standing, which she described as being of characteristic rice-water appearance, and frequent—had vomited a few times only since having thrown off from the stomach, at about 1 o'clock at night, the meats she had eaten for her supper, in a sour, undigested state. Her constitution seemed unimpaired. She was sitting up, but complained of sinking, and great weakness. The pulse was feeble, the skin cool and dry, and the countenance pale.

On looking into this patient's mouth, the most perfectly displayed *early* characteristic signs of scorbutus presented, that it has ever fallen to my lot to witness. The mucous membrane of the entire mouth was pale, the tongue furred centrally, and pale and smooth laterally, the gums *pale* and *contracted*, save and except the most vivid *crimson*, I should say almost *vermillion line*, of less than the sixteenth of an inch in breadth, ornamented their dental margin, inside and out, festooned around every tooth, and the teeth all perfect in each jaw. These characteristic signs of the scorbutic diathesis were examined by Dr.——, who visited the case with me. The following prescription was made :

℞.—Acid. cit. ʒ i.—Quinæ Disulph. gr. v.—Morphiæ Sulph. gr. j. —Spt. Vin. Gal. ʒ iv.—Sacch. Alb. ʒ i.—Aquæ. Oij. m. f. sol.

S. Take a wineglassful every fifteen or twenty minutes, according to the urgency of the diarrhœa and vomiting.

The patient was ordered to keep her bed, and to have a

pot of soup made by boiling a cut of fresh beef-steak, potatoes, turnips, onions, carrots, etc., together, flavored with savory herbs, and well seasoned with salt and cayenne pepper. This to be partaken of freely, and as hot as it could be supped, at the earliest moment it could be prepared. At 12 o'clock, M., the patient was visited again: she had followed directions, had taken the medicine several times, and supped a small bowl of soup. All disposition to vomit had ceased—the diarrhœa was much less urgent, and although no reaction was yet apparent, it was evident the case was doing well. Medicine and soup to be continued. At 2 o'clock, P.M., saw the patient again, and found her in a gentle glow; the skin soft and moist, the pulse full, the diarrhœa entirely checked, and feelings of perfect ease and general comfort were manifested by the patient.

At 9 o'clock on the following morning visited the patient again, in company with the physician in ordinary, and found her up and making her bed, feeling well. She expressed the greatest joy in being allowed the free use of vegetables and fruits. On examining the mouth, the crimson line at the margin of the gums was greatly faded. The husband and an unmarried sister of the patient exhibited none of the objective signs of scorbutus.

CASE 3.—Passing up Smithfield street, saw a young man in an alley vomiting. Took him to the office of the Board of Health near, and examined his mouth with Dr.——; find it in a very scorbutic state—tongue furred centrally, pale laterally, and *the gums puffy and livid all over.* He has had diarrhœa two days, and has taken two or three glasses of brandy this morning to check it—is partially inebriated. He refuses to take medicine if prescribed, finally consents to take a glass of soda water and suck a lemon. This case not seen afterwards, and is only presented as disclosing the objective signs of scurvy in cholerine.

On the morning of the 26th I repaired to the Mercy Hospital, bearing a note from the Rt. Rev. Dr.——, desiring that I might be facilitated in making medical investigations in the Institution. Every facility was thus obtained, and marked facilities shown me by the Sisters of Mercy, and the

visiting physician, (no resident physician then in the Hospital) who arrived soon, and went his morning round, giving me a hurried history of the cases in the Cholera ward, and leaving me to investigate them at my leisure. My views of the nature of Cholera were briefly explained to the physician before he left the house, with the request that he would make observations, and test the value of anti-scorbutic treatment. Five consecutive hours were then spent in examining the following cases, comprising *all* the Cholera patients in the Hospital under treatment, and one in the convalescent ward. All the cases were admitted under fully developed Cholera, bordering on, if not in collapse, as per the testimony of the physician.

Case 4.—Cornelius Shanahan, aged 20, admitted a week since, now convalescent, mercurial odor present—the gums are spongy, swollen, and livid all over—petechiæ, in the early or efflorescent stage, sparsely scattered over the sides of the neck and arms—skin on the outer sides of the arms and legs, and also the palms of the hands, covered with white furfuraceous scurf—the lividity and swollen condition of the gums far exceed that which should result from the slight ptyalism present—no salivation or spitting—patient says he has eaten little or no vegetable food this season.

Case 5.—Mrs. Mary McStay, aged 28, has an infant at the breast, attacked two days since, admitted yesterday—four cases of Cholera occurred in the house where she boarded—thinks there was a reasonable supply of vegetable food—dejections not watery or copious, and no vomiting—patient not emaciated—not much Cholera aspect in this case—no mercurial odor. It should be observed that the treatment of the Cholera cases is routine—all the patients are put under the administration of two grains of calomel, combined with opium, quinine and capsicum, every two hours, or until vomiting and purging cease. Of course the appearances in this patient's mouth are not modified by the effects of mercury, having been less than one day under treatment. On inspecting the mouth, I find the tongue coated with yellowish-white fur, and the sides red and granular-looking, or rough—there is an intensely red line along the dental margin of

the gums, and they are beginning to assume a red and softened appearance all over—no petechiæ or abnormal appearances on the skin. A bilious-cholera-scurvy case, lactation aiding its development, and a panic bringing it forth too soon.

Case 6.—Louisa Hines, aged 17, admitted a week since—is from the County Jail; which, it appears, is made use of as a Penitentiary, *alias*, House of Starvation, where she had been confined three months on bread and water, and soup twice a week—the Jail fare—no potatoes, turnips, cabbages, or other vegetables, nor fruits of any description allowed! The Cholera, of course, broke out in this prison, and a general jail delivery ensued. Many of the cases came to the Mercy Hospital, and Louisa is one of three only that remain alive! The prison is certainly a disgrace to the City, County, and State. The constitution of this patient is sound—the skin is normal, and, save paleness of countenance, and the *scorbutic crimson line* tied around the teeth, this patient appears otherwise all right. There is no ptyalism or mercurial odor—the gums are *pale and contracted*, except at their dental margins, and the mucous membrane of the mouth generally is very pale. These appearances are *pathognomonic* of the early stage of scurvy.

Case 7.—Mary Anne Groff, an old German woman—but a few weeks in America—husband and son have died of Cholera in this epidemic. This old lady has only two teeth in her mouth; her system is not in the least affected by mercury; but the gums surrounding her two teeth are puffed up fully a quarter of an inch thick—the rim of the edentulous gums is normal—the tongue is furred on the center of the dorsum, and very pale and flabby laterally—skin dry and scurfy—red petechiæ on both legs, and discolorations of fading purpura all over the calves—many minute red petechiæ on arms, and skin generally.

Case 8.—Mrs. Myers, aged 45, a butcher's wife—husband has had Cholera, and is now in the convalescent ward. This patient is corpulent, (as a butcher's wife should be,) and insensible from congestion of the brain—under treatment six days—no ptyalism or mercurial odor—gums swollen and

puffed up half as thick as my finger, and livid as a piece of liver—skin all over the body, especially limbs and back, besprinkled and bespattered with petechiæ, and bloody chops, which ramify extensively in zigzag bundles and fantastic spangles and clusters, interspersed with large ecchymoses or patches of purpura. In numerous places the blood has oozed through the chops or cracks, and can be scratched off with the nail in the form of dried blood-scabs. The purpura patches, or ecchymoses, on this patient's legs, are as large as my hand, and of bacon-rind or mummified appearance. Here is scurvy in a fat subject produced by meat eating; and when the serum of the blood was leaking through the chops in the mucous tissue of the stomach and bowels, and being vomited and purged off, it was a case of Cholera.

Case 9.—Isabella Merritt, aged 25—the dietary of this patient has been bread, meat, and coffee generally—seldom eats any vegetables—has had excessive palpitation of the heart, and weakness for a year—has not eaten any vegetables or fruits of any description for more than three months past, except cabbage on two occasions—breath betrays a mercurial odor, and her mouth generally, and swollen, livid gums, in particular, give indubitable evidence of the scorbutic diathesis—no petechiæ.

Case 10.—Mary Ellen Daily, aged 25—admitted three days since—has had diarrhœa since early in August—mucous membrane of the mouth chopped and excoriated in patches—gums display the crimson line along the dental margin, but are not yet puffy—recent petechiæ of every size, from mustard seed to buck-shot, are scattered over limbs, face, and body—the petechiæ are perfectly round, not raised or papillated, and not capable of being felt by the touch—they are pale crimson, disappear under pressure of the finger, and return instantly on removal of the pressure—no mercurial odor of the breath—tongue getting dry, with tendency to coma, or typhoid symptoms.

Case 11.—Edward McDowell, aged 28—admitted a week since—is from the jail—was an inmate of the prison fourteen months—has had diarrhœa since February—dietary of the prison, bread and water, and soup twice a week, Wednes-

days and Saturdays; but patient seldom partook of the soup, finding it produced an aggravation of the diarrhœa — an affection of the heart came on after being in the jail five months, which has troubled him ever since—has had great irritation of the throat since February—has picked out five or six of his teeth since April with his fingers—mouth displays the objective signs of scurvy in an eminent degree—there is great pallor of countenance, and a universally anæmic appearance—there are numerous petechiæ on the skin, and the back is mottled with walnut-colored marks of desquamated vibices of the size of buck-shot and rifle-balls, too numerous to count, the epidermis hanging to some of them. In June and July the patient had bloody discharges from the bowels; in May and June vertigo and palpitation were most distressing. The authorities by which the Pittsburg jail is upheld are entitled to a premium for this, the "best" case of Cholera seen.

Case 12.—James Hall, aged 20—admitted two days since—has worked all summer in a brick-yard—has had no potatoes or turnips at all for four weeks, and none, indeed, worth mentioning, for four months—pork and beef, and bread and coffee, have constituted his dietary—skin dry, scurfy, scaly, or furfuraceous, particularly on the extremities—gums very much puffed up, or swelled, and livid as liver—tongue clean and flabby—countenance pale—no petechiæ to be seen on legs or arms, back not examined—no odor of salivation—sound, with the exception of scurvy.

Case 13.—Wm. Campbell, of middle age — admitted on yesterday — insensible from congestion of brain, and I can gain no information as to his mode of life—gums very red and swollen—petechiæ in their red stage sparsely scattered over the limbs and body — Cholera in the last stage — moaning and jactitation and deep sighing—eyes inflamed—face red—has probably been a hard drinker.

Case 14.—John Tammany, aged 28—admitted three days since—has had an ague this (Tuesday) morning, and is now in the sweating stage—no Cholera symptoms present—has worked in an iron furnace in Ohio this season, where all around him had ague and fever—came to Pittsburg a week

since, but had not had a chill for four weeks—wrought one day in Pittsburg, and on the next day, which was Saturday last, was taken with a chill, and vomiting and purging, and was brought to the hospital—says he had good diet in Ohio, meat and potatoes, etc., but not much vegetable food during May, June, and July—in July sickened of bilious fever—has had an extensive and troublesome eruption of sores all over his legs, which leaves the skin marbled, and of a dark chocolate or slate color, wherever there has been a sore—a cicatrix of large size on one leg is dark walnut color, or bacon-rind appearance—there are a few petechiæ or flea-bite specks sparsely scattered over his arms, say a dozen on each, well marked—the gums are swollen and livid all over—countenance very pale—no mercurial odor—the objective signs of scorbutus, and the symptoms of a quartan ague, are all the morbid phenomena that are left of this case of Cholera.

Case 15.—Thomas Clennin, aged 30—admitted two days since, or on Sunday—felt sick on Saturday while traveling on foot from Washington, Pa.—thinks he has eaten of new potatoes a few times since they came in; but for five months has lived on ham, eggs, beef, bread, and coffee—mercurial odor in his breath—has lost most of his teeth, and also his palate, which he says occurred five years ago from medical treatment in Baltimore; under mercurial salivation his teeth came out, and his palate sloughed off. The gums surrounding the teeth that remain in this patient's jaws are very puffy and livid—tongue pale and flabby—no petechiæ are visible on arms or legs, back not inspected. A very much broken-down subject—doubtless had scurvy when he suffered the loss of his teeth and palate—says he never had the venereal disease—scurvy and mercury are all that ail him now.

Case 16.—James T. Parsons, aged 32—admitted a week since—came from the jail—was three months there—mouth modified by treatment—tongue red and clean—gums very much swollen and livid, and blood oozes from their dental margins on slight pressure of the finger—breath fœtid, but odor not mercurial—numerous crimson colored petechiæ are scattered over his face, neck and arms, and some of them are papillated to the touch; large blotches of purpura on the arms.

Case 17.—John Donohue, of middle age—admitted on Friday last—choleric symptoms mild from the first, and soon disappeared—at present there is a universally icteric state—tongue furred in the centre and pale laterally—gums very red and puffy—no mercurial odor—no petechiæ on arms or legs—back not inspected. Jaundice and scurvy are all that are visible, and the former is not more characterized by the pathognomony of the skin, than the latter of the gums.

Case 18.—George Brandstatter, a German immigrant of about 50 years of age, just arrived in this country—admitted on yesterday—objective signs of scurvy very prominent in this patient's mouth, as seen in the livid spongy gums, and pale flabby tongue—no petechiæ on arms or legs, back not inspected. This patient is vomiting and purging still, and is sinking rapidly into the stage of collapse—would be gratified to put him under the administration of the hot punch and hot soups, or the rational treatment, to staunch the hemorrhage and afford materials for new and healthy blood, but cannot interfere.

I must here pay a merited tribute to the Choir Sisters who officiate in this hospital. One or other of the three, all evi dencing the highest order of intelligence, insists on accompanying me at the bed of every patient, to give the history of the cases, uncover the limbs and back for inspection, and in every way facilitate my investigations.

Case 19.—John Wheely, aged 21—a German immigrant just arrived—admitted on yesterday—still vomiting and purging—gums very red and puffy all over—tongue furred centrally and pale laterally—no petechiæ discernible.

Case 20.—C. J. Smith, a young man from New York—admitted over a week since—he is now in the convalescent ward, having surmounted the hemorrhagic tendency of the disease that gives rise to vomiting and purging, yet is in no other sense cured—his gums are frightfully abnormal in appearance—look as if beaten and bruised and puffed up from the injury—the tongue is clean and red, the mouth throughout modified by treatment—general appearance very anæmic. The dietary allowed the convalescents is milk and bread, and soups, with rice, but without succulent vegetables. This

young man came to Pittsburg about two months since, and has hardly partaken of any succulent vegetable food since he arrived here. Several other convalescent Cholera patients whom I have examined in this ward, exhibit the same objective signs of scorbutus in an eminent degree, and their history prior to admission discloses the same absence of succulent vegetable food in their dietary. It is unnecessary to detail these cases.

The analysis of twenty cases of Cholera, then, discloses the fact, that every case was a case of scurvy, not a solitary exception, in, or out of the hospital, comprising *all* seen. This is a remarkable announcement; nevertheless, remarkable as it may seem, every word of it is truth. Had not the physical evidences of scurvy been present in *every* case, I should have marveled. The appearances which I have described will be found in all cases of true Cholera, and will henceforth be noticed by all practitioners in all parts of the world. Why they have been so long overlooked, (why they should have escaped my observation heretofore, *generally*, and where noticed in 1849 and '50, a complication of diseases should have been inferred,) is a matter of as much astonishment to me as it can possibly be to others: but such are the facts. Why, I have now been made the humble instrument of explaining the matter, is doubtless due to circumstances rather than to extraordinary penetration, or superior professional attainments. It has been a hard and difficult task to divest my mind of the false notion of some specific, poisonous influence, *overlaying* scurvy, even since I have been fully aware of the scorbutic diathesis *underlaying* Cholera. It may be difficult for others, even yet, to see clearly: but if, as appears by our analysis, every case of Cholera occurs in a scorbutic subject, or in other words, that Cholera is a messenger of death riding *always* on the time-honored steed scorbutus, it matters but little what be the theory as to the office or entity of the messenger—if we destroy the steed, the rider will get on but poorly. This we know how to do. But I can see no occasion now to search for further cause of Cholera than the causes producing scurvy, no phenomena in Cholera other than what harmonize with the known laws of

scurvy, and nothing at the bed-side after the hemorrhagic action is arrested but the physical evidences of scurvy, neither do the books describe any anatomical lesions contradictory to this view.

In conclusion, if I have not explained every thing pertaining to the subject in this brief monograph, I have given the key that will explain every thing when the laws of scurvy shall be perfectly understood, and it is a consoling reflection that nations, cities and families can hereafter enjoy protection or immunity from the scourge of epidemic Cholera, by simply conforming to the natural laws in regard to diet. The proofs presented, that Cholera is a modified form of scorbutus, are as strong as physical proofs can be, or as strong as inductive reasoning can present; as strong as that the sun is the centre of the solar system, and that the earth and the other planets revolve around it: all the phenomena admit of explanation by the theory—the theory tested by practice proves effectual. *Why* scurvy is thus modified, (it always was a Proteus), has constituted no part of these researches. This will be a subject for further reflection with the writer. The laws of scurvy have yet to be investigated by modern observations, researches and statistics. The scorbutic diathesis may yet be found to hold a more special relation to *all the zymotic diseases* than has heretofore been suspected. Medical meterology, or the constitution of the seasons, (abridgment of the crops and fruits by blights,) holds a direct relation with the state of the public hygiene; and it is to this *tangible* cause of disease, and not to an imaginary *malaria*, that we are to turn in search of the laws governing epidemics. With a rational pathology, treatment and prevention made known, Cholera is divested of all its terrors. Sanitary regulations can now be instituted that shall meet its invasions at the very threshold—in ship, camp, or city, and the public mind be so indoctrinated by suitable publications on the subject, that every family may know in what constitutes its safety; in fine, the true philosophy so disseminated, that the wayfaring man, though a fool, need not err therein.

APPENDIX.

EXTRACTS FROM BRITISH JOURNALS.

Blights and Cholera.—In *Ranking's Abstract*, *January*, 1854, *p.* 219, will be found the following notice of blight in vegetation coincident with Cholera, corroborating my theory:

"The swarms of flies which have been noticed at Newcastle, during the present epidemic, and which were noticed in the epidemic of 1832 at Montreal, seem to mark one phase of that *blight in vegetation and murrain among cattle*, which has preceded the Cholera scourge, and which still attends upon it."

The following establishes the coincidence of blight and pestilence.

"The coincidence of *blight* with pestilence has been recorded from ancient times, and the wide spread *potatoe disease*, which has now extended to almost every region of the globe, concurrently with the presence of the influenza and cholera poisons in the air, may possibly be a modern instance of it."—(*Report on Quarantine, London*, 1849, *p.* 14.)

The course of nature—the annual revolution of the earth—is governed by laws more or less favorable to the perfect development, or the perfection of vegetable life; and imperfection, decay and death of vegetation inhere also in those laws. It is morally impossible it could be otherwise. Deity could not carry out the law of the seasons, and the succession of vegetable and animal life by natural causes otherwise. Imperfect vegetation leaves the lower orders of animals and man on defective alimentation; and thus inlays latent disease, to be developed under excessive impressions of the meteoric vital stimulants. Hence the coincidence in all time of blight and pestilence, the latter following, as the tides follow the moon's southing; and yet the exciting causes—ardent meteoric impressions must concur to develop fully the epidemic phenomena. The cause of blights, then, is chargeable to the laws of nature, and Cholera to blights. I am aware that Diemerbroeck, Webster,* and perhaps

* See Webster on Pestilence, vol. ii. p. 128.

others, charge blights, sickness in animals, and epidemics in men, all to some unknown, mysterious, common cause, as the influence of comets, &c.; but my observations do not warrant this inference, nor do I think such views truthful, philosophic, or calculated to advance medical science.

Acid Treatment of Cholera.—In the same No. of *Ranking's Abstract page* 222-24, noticing the treatment of Cholera down to that time, the Editor remarks as follows:—

"The treatment by sulphuric acid, however, is that which seems to be of greatest promise. This treatment we have tested to a considerable extent at the Westminster Hospital, with half-drachm doses of dilute sulphuric acid, with a drachm of the compound tincture of cardamoms, and a little peppermint water, and the result has been almost immediately beneficial. The constant answer of the patient has been, that the first dose relieved and the second or third stayed the complaint. * * Nor is this practice quite empirical, for if this acid acts beneficially in herrmorhage, it may be supposed to act similarly in Cholera, the serous discharge of which may be called a *white blood hemorrhage*.—[Editor's italics.] Several writers have called attention to this acid treatment during the last half year, particularly Dr. Fuller, (*Medical Times and Gazette, Oct.* 1, 1853.) Dr. Fuller says:

"My own conviction is, that in sulphuric acid we have an antidote—a specific against choleric diarrhœa, if not against the worst forms of Cholera, as powerful, as energetic, and as certain in its effect, as in cinchona bark or quinia against a paroxysm of ague.

"The effects produced by this remedy are very remarkable. Sometimes after the second dose, more commonly after the third, and almost always after the fourth dose of the medicine, the patient experiences a grateful sense of warmth at the epigastrium; heat returns to the extremities; the nausea and vomiting immediately cease; the purging is stayed; the cramps subside; and the countenance resumes its natural appearance."

The above will suffice to show the efficacy of the acid treatment of Cholera, although much more could be added from the British journals, corroborating the fact; and the rational explanation is afforded by my views of the *scorbutic nature* of Cholera.

Cholera and Scurvy.—Further and most striking corroboration of the truth of my views of the scorbutic nature of Cholera, is found in the able paper of Mr. Thom, published in the *Medical Times* in 1848, from observations made at Kurrachee, India, while surgeon to her Majesty's 86th regiment. I quote three of his paragraphs:

"*Latent condition of Cholera.*—The state of the system referred to, as resultant on chemical change of the constituents of the air, in which carbon is accumulated in the blood and fibrin, and albumen diminished, will vary in degree according to idiosyncrasies, habits, and constitution, so that certain numbers of a community will be afflicted to an extent bordering on, or breaking out, into open disease. Noxious agencies, whether of atmospheric origin, acting on the skin and lungs, or as poison introduced through the assimilating functions, when applied in a minute degree, but steadily kept up for a length of time, have a tendency to produce effects that are called accumulative. Their action is latent, but not the less certain, till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose.

"*Connection with Scurvy.*—The scorbutic diathesis furnishes a forcible example of this; and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to Cholera, between which and scurvy there is a great analogy in the state of the blood; and on Cholera subsiding, the scurvy appeared in our regiment, and also in other corps.

"*Sudden Climax of Accumulative Morbid Changes.*—If, then, by a sudden increase of all the causes of this latent diathesis, a state of weather inducing universal congestion almost approaching to obstruction of the vascular system occur, can we be astonished that life will, in many, be abruptly cut short, as if some lethiferous draught had been swallowed? Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of Cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion.—(*Medical Times, March* 11, 1848, *page* 388—*Epitomised in Ranking's Abstract.*)

Whoever reads the above attentively, must either adopt Mr. Thom's view, that there is a *choleric diathesis* so much like the scorbutic, that its accumulation in the system, latent condition, and sudden law of collapse, are so similar, that no one can diagnose clearly between them, or my view, that Cholera is scurvy: it is either some great analogous evil, or it is the same thing a little varied in aspect. The reader must judge which is the more probable view. I marvel that Mr. Thom did not identify Cholera and scurvy.

LATE OBSERVATIONS.

The year 1854 will be long remembered in the United States as a year of scarcity and high prices of provisions. The summer was hot and dry, and Cholera was epidemic or subepidemic in most of the cities and many of the villages. The objective signs of the scorbutic diathesis were apparent in the mouths of most persons whom I examined during the summer, fall, and succeeding winter, which was a hard one; and in the spring of the present year, 1855, land scurvy was very prevalent all over the Western States, at least. When the spring opened, and warm weather set in, the Cholera began to appear, and some cases occurred even in the winter. The weather was hot in May for that month, and in boats on the Mississippi river; among emigrants; in the river towns; in the extreme Western new settlements of Missouri and Kansas; and especially at New Orleans; the Cholera broke out and raged epidemically. The months of June and July were cool and equable, the thermometer never indicating over 88 degrees F. in the shade in my sleeping apartment, southern exposure, second story, during the entire two months; and refreshing showers of rain watered and cooled the earth from time to time, and caused unexampled crops

of early summer vegetables and fruits, unprecedented in the annals of our country, both as to quantity and excellence of quality, to greet the longing appetites of everybody. Cholera began to abate under this state of the healing virtues of succulent vegetables and fruits, and mild, equable, summer temperature. Cases of Cholera, however, are now, second week in August, of every day occurrence in Cincinnati and vicinity. Four deaths occurred in one day of last week at the Commercial Hospital. I went hastily through some of the wards of that institution early in July, and saw many cases of scorbutus; I was through the jail in May, and noticed that the objective signs of latent scorbutus were general in that prison. Lexington, Ky., and many other towns in this region, have suffered more or less from Cholera. Last week it was announced in the public prints that the Cholera had broken out in the Insane Asylum at Lexington; some ten or twelve deaths suddenly occurring. Wherever it has appeared, it has been very mortal. Not only Cholera but Yellow fever has appeared epidemically at New Orleans, and some of the cities on the Atlantic coast, sufficient to give the hint, at least, that this fell scourge may also be a a scorbutic fever, depending for its cause remotely on defective alimentation also. The black vomit that so especially characterizes it, rather favors the idea, it being a *gastric hemorrhage* undoubtedly. Still, as I have never seen a case of this disease, nor tested the efficacy of the acid treatment, this suggestion is offered only as a suggestion.

Now, in this brief recital of the constitution of the past year and present summer, who does not see the strongest corroborating evidences of the truth of my theory? Latent scurvy or Cholera has been seen lying broad-cast all over the land since early in the spring, and in some places, as at Jefferson Barracks, the supposed two diseases, but really only different modes of manifestation of the same disease, broke out simultaneously in epidemic form among the recruits, about the 10th of May, thermometer at about 90 degrees F., but was soon subdued. An unheard-of abundance of West India fruits, oranges and lemons, at a cent a piece, greeted us early in the spring, followed, as has been said, by a flush of all kinds of native fruits and vegetables in their season, of the very best quality, to the reduction of the price of potatoes, the grand succulent staple, from two dollars to forty cents, the present price per bushel, and all else in like proportion, the meteoric exciting causes of disease holding of the mildest and most equable character thus far; no sudden changes; no remarkable variations of weather

or vicissitudes of temperature; abundant rains at reasonable intervals; medium flowing rivers; harvests astonishingly fine; in a word, a year of plenty to heal the scorbutic million, or, at least, stay for this season its wide-spread and general epidemic manifestation. Still some are seized with the "white blood hemorrhage" notwithstanding. Here and there occurs a case of Cholera in the practice of almost every physician. Eighty-eight deaths last week from Cholera in Cincinnati, in a population of probably 180,000: subepidemic at least. In this state of things, I urge it upon the attention of those physicians whom I meet, to take note of the state of the gums, and tissues of the mouth and throat, in every Cholera case, and to try the anti-scorbutic treatment, viz., acids, soda powders, punch, whey, soups, etc., *ad libitum*, combining a little morphine and quinine with the punch. This course proves successful in my practice, and that of other physicians so far as tried.

CASES AND DEDUCTIONS.

Case 1.—This case was handed to me by a friend, a veteran practitioner in this city, who practiced here through the Cholera epidemic of 1832, and who moreover received my views, when first announced, as visionary.

"Cincinnati, *March* 22, 1855.

"Dr. KNAPP, Dear Sir:—The following very briefly drawn up case, of recent occurence in my practice, I deem in unison in its results, with the theory I heard you advance in a paper read before the Medical Society of this city.

"Feb. 23, Was called to see Mrs. ——, age 38, mother of five or six children, youngest still nursing, one year old. Patient is laboring under a severe form of granular conjunctivitis of some weeks standing—had been under medical treatment previously—is of rather cachectic habit.

"Feb 26, 10 o'clock A. M., found my patient laboring under chronic diarrhœa, now suddenly aggravated—some half dozen stools during the night, and as many more by 10 o'clock this morning, of a strongly marked Cholera nature, viz., of rice water appearance, and the peculiar fœtid odor of the worst cases of Cholera as it appeared in this city in 1832. Pulse small and feeble; countenance sunken; skin bedewed with cold clammy perspiration; great pain and colicky cramps in the bowels; in fine, symptoms verging to a state of collapse.

"Directed of sulphate of morphia one-eighth of a grain; and sulphate of quinine two grains, in solution to be given every hour until the bowels should be checked, and quietness induced; and the patient to drink of hot whiskey punch, and fresh lemonade *ad libitum;* to have stimulating frictions to the skin; to observe the recumbent posture, even at stool; and at the same time to drink freely of highly seasoned animal and vegetable soup.

"At 2 o'clock P. M., found my patient resting quietly—diarrhœa perfectly arrested—morphine and quinine omitted—continue lemonade and soup.

"Feb. 27, Slight return of diarrhœa this morning, but relieved by repeating prescription, with punch and soup diet continued. Convalescence was rapid under this course and permanent.

"Very Truly, Yours, &c.
F. A. WALDO."

The above scorbutic case is very similar to some that fell under my observation at about the same date. There oc-

curred a very mild state of weather for some two weeks in February, followed by sudden and severe cold, repelling the fluids in, upon the internal capillaries, and the consequence was a white blood hemorrhage from the bowels, in many of the scorbutic poor.

Case 2.—This was one of them, and occurred in a nursing, poor woman, who, together with a suddenly aggravated chronic diarrhœa of the fœtid, rice water character seen in Cholera, had a conjunctivitis of the eyes that would have eclipsed any eyes for redness seen in the last or comatose stage of Cholera. I treated the case with the sourest kind of whiskey punch, morphine, and potatoes ; one ounce of tartaric acid to a quart of Ohio whiskey, five grains of quinine, and two of morphine, used *ad libitum*, with either hot or cold sweetened water—potatoes and milk diet. From being bed-rid and blind three weeks, she was up and about in ten days, and the eyes gradually recovered their whiteness without any local applications whatever. Scorbutic sore eyes that baffle the skill of all who misjudge or overlook the constitutional seat of the ailment, are common. This case, as also that of Dr. Waldo's, was, in my judgment, a case of *nursing sore eyes*, naming the disease, as is fashionable, from the most striking symptom—Cholera, when the bowels were rapidly running off with rice water discharges—but scurvy when generalized to its root. The objective signs of scorbutus were prominent in the mouth—tumid gums, and tongue red and sore at the tip.

Case 3.—I was called June 13 to attend Mary C——, an Irish servant girl aet. 20. Found her vomiting and purging, and laboring under great epigastric oppression, and much general distress. The discharges were not copious, but of rice water appearance, and the vomiting occurred only at long intervals. Nausea was constant, and drinks were ejected with much retching. She had had diarrhœa for a week, which had baffled all the domestic remedies, and vomiting supervened the evening before I was called. There was palor ; a weak pulse ; moist, pale, flabby tongue, slightly furred on the dorsum ; and hyperæmia of the gums and arches of the palate. On asking her what she most craved, she replied, "something sour." I ordered a pint of lemon juice and a pint of whiskey, with two grains of morphine and two of quinine mixed, and a table spoonful to be taken in a little ice water sweetened, every half hour, till the irritability of the stomach and bowels was quieted. She retained these potions ; had no more vomiting ; and the diarrhœa ceased in a few hours. The following day she took and retained boiled milk and soup ; and on the third day partook of solid vegetable food and stewed fruits of the season. She was ordered to continue the medicine three times a day, and to make use of vegetables and fruits, and to drink freely of lemonade daily. Under this course she gradually recovered her strength and returned to service. This was evidently a case of scurvy that took on the choleric form, symptoms not unusual, as we shall see in the sequel.

Case 4.—Summoned June 14 to attend Mrs. A——, a nursing Irish woman, attacked with well marked ague. The rigor had lasted a full hour, and I found her in the hot stage, laboring under great epigastric oppression, and the universal distress common in such cases. It being a very plain case, I prescribed according to routine usage in such cases, viz. fifteen grains of quinine and one-fourth of a grain of morphine to be taken instanter. In an hour she was in a full sweat, which lasted twelve hours, and left her free of fever, but very weak, so weak she thought she was dying, and so sent for her confessor. On examining her mouth next day, I found that the gums betrayed the crimson line along the dental margin ; that the tongue was sore; the buccal surfaces papillated with numerous pustules in patches ; that the fauces were highly crimsoned; and all needful objection signs of scurvy present—a nursing sore mouth case, to all intents and purposes. I put her on acids, tonics, and a fresh, sueculent, vegetable diet, and ceased to look after her, as she was able to rise and walk about house, and the husband fidgety in view of a medical bill.

Six weeks subsequently, a short time since, she accosted me on the street and related to me her narrow escape from death by an attack of Cholera. She said she suffered from diarrhœa two days, when vomiting came on in the night time, and was violent till morning, when it began to abate under her domestic remedy, and soon ceased. The remedy was *sour whey*, made by mixing sour buttermilk and boiled sweet milk together, and pouring off the whey. This she drank freely, and as hot as she could sup it. She described it as being exceedingly grateful in quenching her thirst, and said it finally stopped the vomiting and purging. This was her account, and I have no reason to doubt the truth of her simple narration of facts. I examined her mouth, found she had scurvy still, took her to my office, and prescribed for her, and her infant six months old, laboring under it also.

This is, indeed, a very instructive case. Four diseases, nosologically, atop of one another; viz.: scurvy; intermittent fever; nursing sore mouth; and Cholera. No comments I can make upon it will, perhaps, have the same force as the following remarks of Dr. Barnes on scurvy as he finds it masked by other diseases in the London Hospital:

"Marked cases of scurvy are not, perhaps, numerous in London; but minor degrees of the scorbutic condition may be detected on careful inquiry and observation. Patients so affected present themselves at the hospitals, complaining of various ailments, such as rheumatism, fever, gastralgia, debility, hemorrhages, dysentery, &c., the scorbutic taint being masked by the more prominent disease. Dr. Barnes regards it as certain, that if these more prominent diseases have not in all cases arisen as secondary affections upon the scorbutic degradation of the blood, yet that their nature and course are so modified by this complication, that it is necessary to take the scorbutic taint into consideration in prescribing the treatment. Good diet becomes a most indispensable point, without which the ordinary medicinal agents can affect little. It was an observation of Commodore Anson, which has been confirmed by modern experience, that those who are debilitated by advanced or immature age, or previous disease, are most prone to fall into a scorbutic condition. The children at the well known school at Tooting were mostly disposed to scurvy from bad diet before the cholera broke out amongst them. [Hear.] * * It is well known that the deaths of thousands of soldiers, registered as owing to fever, rheumatism, pneumonia, and other causes, are in reality to be ascribed, if we ascend to the primary pathological conditions, rather to scurvy, [hear,] a condition upon which the fever, rheumatism, and other immediately fatal diseases, are but epiphenomena." [Hear, hear.] (*London Lancet, June*, 1855.

Then, according to Dr. Barnes, of the London Hospital, the case I have just related must be regarded scurvy at the base, the real "primary pathological condition" to be prescribed and dieted for, as a *sine qua non* in the treatment, and all above it a masquerade; or, in other words so much nosology; that is, the intermittent fever, nursing sore mouth, and Cholera, were extraordinary *top symptoms* of scurvy; more conveniently and properly classed as diseases perhaps, since the course and symptoms are so unlike ordinary scurvy; but equivocally advantageous to the interests of medical science and humanity, if the dignity of names is made to obscure the primeval pathology, and wholly sink the cue to the remote etiology—defective alimentation. Dr.

Barnes's application of the principle to the Tooting children is an illustration of my views precisely. Upwards of a thousand pauper children were in that establishment, "*disposed to scurvy from bad diet before the cholera broke out amongst them*" in 1848, after the potatoe blight and general scarcity that prevailed throughout Great Britain during the times of the Irish famine; and some 300 or more of them took on the scorbutic or white blood hemorrhage, and died of cholera—epi-phenomena of the scorbutic, pathological condition, according to Dr. Barnes, June 1855—A hemorrhagic termination, or the dying phenomena of scorbutus, as I explained the matter a year ago, August, 1854.

Now these views of Dr. Barnes, based on observation and therapeutics in the London Hospital, are too important to be lightly passed over by the profession; and running parallel with my views and observations in diagnosing and treating Cholera as scurvy, it would seem that these new views should have been entitled to anything under the name of criticism rather than the attempts at ridicule which some wise editors have seen fit to bestow. However, if the subject is one to justify ridicule—if researches in medical science by any member of the profession are ridiculous—if original views on the grave subject of cholera, based on facts and observations, are in the opinion of some journalist reviewers matters worthy of being ridiculed and laughed at; so be it: I should expect in the next place to see them deriding virtue of any kind.

It is to be observed that I do not enter a special plea in this essay for any disease being of scorbutic character but Cholera. I am treating of that subject solely, and do not care to complicate it. It will appear, however, before I close, that, not only the choleric phenomena, but also the symptoms by which some other diseases are characterized, are but *epiphenomena* of scurvy according to the old authors, as well as Dr. Barnes of the London Hospital. At all events, I think I shall be able to show by ancient and modern authors that scurvy is not greatly modified, after all, as manifested in Cholera.

Case 5.—Common cider vinegar, drunk undiluted, has, in one case of severe vomiting and purging that has fallen under my observation this summer, occurring in an apparently healthy youth, and which I held to be Cholera morbus, proved an effectual remedy. It is the opinion of some physicians that Cholera and cholera morbus are the same. I have assumed in the body of this essay that these affections are essentially different; that the former is a scorbutic affection, and the latter an accidental irritation, caused by a surfeit or offending ingesta; just as we can excite the affection by tartar emetic, in a person in health. Still I may be in error; and the case cured by vinegar will then stand as another proof of the efficacy of the acid treatment in Cholera, and corroborative of its scorbutic nature.

Case 6.—My friend, Dr. Waldo, has just informed me of a very recent case of Cholera, cured under his observation by *hot whisky punch and nutrition.* The case was in the profoundest collapse, and deemed hopeless, when the Dr. suggested the punch and soup treatment. This was in the evening. In three hours time reaction began, and on the following morning the girl was able to converse; had no more vomiting or purging; and speedily got up on a continuance of acid drinks, and proper nutrition.

Case 7.—July 4th, called towards evening to attend a laborer, whom I found in the collapsed stage of Cholera, pulseless and blue as an indigo bag. Soon after I entered the room, he crept on his hands and knees from his pallet on the floor to the chamber pot, and after discharging a pint or so of rice water fluid, and being helped back to his couch, immediately expired. His gums in death showed no lividity or evidences of scorbutic softening; and I have noticed that the gum symptoms have been wanting in some other fatal cases of Cholera.

Some practitioners, under whose observation cases of Cholera have occurred this season, have said to me that they detected no evidences of the scorbutic diathesis in the mouth —none of the objective signs of scurvy. By reference to cases No. 2 and 6 in the body of this essay, it will be seen that the gums were pale and contracted, and the tissues of the mouth generally very pale; nothing but a very fine red line along the dental margin of the gums, liable to be overlooked by a casual observer, gave any evidence whatever of the scorbutic diathesis; and this, it should be borne in mind, is indicative of the hemorrhagic tendency, and not a manifestation of puffiness and softening; and may, for aught I know, disappear in the stage of collapse, after the patient is bled to death, as it were. The red line would naturally enough vanish under such loss of blood, and no evidence of scurvy whatever remain. It becomes a matter of importance, therefore, to know what is the state of the gums in the different stages of scurvy; and also to understand that the white blood hemorrhage may set in, and carry off the patient before the scorbutic diathesis has been present long enough to produce tumefaction of the gums. On these important points I am happy that I am not left without authorities, both ancient and modern.

Dr. Shapter, of Exeter, England, says, (*Provincial Med. and Surg. Journ.*, *June*, 1847, *Epitomised in Ranking's Abstract.*)

"In this epidemic [scurvy following the Irish famine] the initiatory symptoms were those indicative of general debility. The patient complained of weakness and listlessness, had a sallow countenance, and *pale and contracted* gums."—[Italics his own.]

Mr. Stiff, (*Med. Times*, *June*, 1847,) says:

"In old and edentulous subjects the gum symptoms do not make their appearance at all," And in subjects having teeth, "at first the margin of the gums is livid for one or two lines, even when the mouth and lips are anæmic, and this appearance resembles the lead symptom."

Dr. Curran, (*Dublin Quarterly Journ., Aug.*, 1847.) noticed in his practice, that—

"A diseased state of the gums was one of the most constant symptoms, being *absent in four cases* only."—[Italics mine.]

Dr. Ritchie, of Glasgow, (*Edinburgh Med. Journ., July and August*, 1847,) noticed four varieties of scurvy:

"One variety was distinguished by anæmia, emaciation, diarrhœa, bloody stools, and dropsy, while *the more distinctive symptoms of scorbutus were wanting.*" [Italics mine.]

And one of the distinctive symptoms here alluded to is tumefied gums, which every physician, almost, seems to think must be present, or the case is not scurvy. Most of the nursing sore mouth cases are of this or the following variety. (*See my paper in the New York Journ. of Med., for May last, on this subject.*)

"A second by anæmia; often by diarrhœa; rapidity of the pulse; epigastric pain or oppression; great general distress; an urticated crimson efflorescence on the skin; petechiæ and hemorrhages.

"A third by pains along the course of the nerves; simulating rheumatism.

"And lastly, the more ordinary form in which affected gums and legs were the prominent symptoms."

Now this last variety has been the one most commonly recognized as scurvy, in and out of the hospitals in these parts this season; but I have seen a number of cases of each of the preceding varieties. Cholera comes more properly under the second variety. Epidemic Cholera in children presents every symptom mentioned in this variety, viz., "anæmia, diarrhœa, rapid pulse, epigastric oppression, great general distress, an urticated crimson efflorescence on the skin, petechiæ and hemorrhages." How could the symptoms of the general run of cases of Cholera Infantum be better described? Nothing prominent is omitted but vomiting; and if the white blood hemorrhage takes place in the stomach, vomiting must and will occur; and then the case would be recognized by all as Cholera. I recognize epidemic Cholera, in both infants and adults, as coming clearly under Dr. Ritchie's second variety of scurvy, and refer my readers to his able paper, and others that appeared after the Irish famine.

The old authors bear testimony to the absence of the gum symptoms also. Lind, in conveying the sentiments of Eugalenus, who wrote nearly 300 years ago, says:

"And what is still more remarkable, the face of the disease was in a few years so much changed, that the putrid gums and swelled legs were no longer characteristic signs of it, as *it often killed the patient before these symptoms appeared*; [Italics mine]; and it is highly probable from the histories of

above two hundred cases of patients delivered in his book, wherein mention is made of the gums being affected in one person only, that such symptoms did now but rarely, if at all, occur." (*Lind on scurvy, second edition, page* 5.)

And in this connection, with the old authorities before me, I proceed to redeem my promise, and to show by quotations from them that the Cholera flux has always characterized the scurvy more or less; that this watery flux of the belly is nothing new; is not a *new disease;* is nothing, in fact, but a symptom of scurvy, as I reasoned and wrote a twelvemonth ago, without then having referred to the old authors on the subject; is nothing, as I then said, but a serous hemorrhage into the alimentary canal, and what follows resultant phenomena; and everybody knows that hemorrhage of some sort is forever taking place in scurvy, is the pathognomonic sign of it; and why Dr. James Johnson did not mistrust the Cholera flux to be a scorbutic hemorrhage in 1833, when he wrote as follows, is matter of surprise now:

"Which diarrhœa is the first stage of a serous hemorrhage, and collapse the natural consequences of the loss of the serous part of the blood."

And again:

"The more we see of Cholera, the more we are convinced that the disease is a serous hemorrhage from the alimentary canal."—(*Medico-Chirurgical Review, Oct.,* 1833.)

But let us see what the old authors say.

Ecthius, who wrote in 1541, more than three hundred years ago, says that—

"During the course of this disease [scurvy,] some are apt to be very costive, while others have a continual *diarrhœa.*" Italics as I find them in all these quotations. (*Lind on scurvy, second edition, page* 307.)

Eugalenus, who published in the beginning of the seventeenth century; whose work has been recommended by the greatest authorities, Boerhaave, Hoffman, and others; the standard author for nearly two hundred years; sets down as symptoms of scurvy:

"Vomitings, retchings, and even *the Cholera morbus.*" He says, "A vomiting is known to be scorbutic, 1st, By not yielding to the common medicines, and those prescribed by the ancients in this disorder; on the contrary, the patient becomes worse after using them: 2d, Its sudden, unaccountable remission, and equally unexpected return: 3d, Its seizing without any previous pain, disorder of the stomach, or distemper described by the ancients." (*Ibid, page* 329.) Just the kind of vomiting seen in epidemic Cholera. "Convulsion, [that is cramp,] of a particular part."—(*Ibid, page* 331.) "Copious sweats."—(*Ibid, page* 333.)

Cholera in every particular; and two hundred and fifty years ago these phenomena were emphatically and clearly diagnosed as symptoms of scurvy; not the most common symptoms of scurvy, by any means, but masking symptoms,

liable to mislead, and therefore this author points out the diagnostic marks of a *scorbutic* vomiting. And never was the suddenly-seizing vomiting of Asiatic Cholera without warning, and all right again after it, often seen, better or more graphically described.

Vander Mye, in his description of the scurvy as it appeared in the seige of Breda, 1627, says:

"The disease was seldom accompanied with a fever, but frequently with a dysentery, or other flux of the belly. * * There were frequent *retchings*, and recurring anxieties. Of those who were afflicted with the *diarrhœa* and dysentery, few escaped. * * * The discharges of the belly in this disease were indeed commonly watery and greasy, [rice water discharges,] but a flux did not relieve the malady. * * In a word, whether the disease was protracted to a longer or shorter period, most died from an internal fault in the *abdomen;* the flux proving rather a pathognomic sign of the scurvy than a critical and salutary discharge. [Hear!] It was before observed, the scurvy broke out about the equinox. At this time the dysentery and other fluxes of the belly were so trifling and uncommon, that we gave no attention to them, directing our whole care to remove the disease itself."

The account states that about two months later, say last of May, or first of June:

"Sordid fluxes of the belly, dropsies, and every species of distress, '*omne chaos morborum,*' afflict them, a great mortality proceeding this way. The physicians, at this time, giving up entirely with the cure of the disease, direct their whole art to remove the flux, and alleviate the more pressing symptoms."—(*Ibid, page* 344–47.)

Here was epidemic Cholera breaking out atop of scurvy under solstitial influences, according to this author; or the choleric passion was the wholesale finishing stroke of scurvy, to the beseiged city of Breda. Have I need to go further to prove the identity of Cholera and scurvy? Is it true, as some assert, that I have adopted a theory, and bend and distort facts to sustain it? No, I could go on and quote from a dozen authors similar proofs, all straight and parallel with my views. Lind, Drawitzs, Timæus, Willis, Moellenbroeck, Charleton, Pitcairn, Boerhaave, Nitzsch, Ellis, and others, all speak of some of the choleric phenomena as being symptoms of scurvy; that is, "vomiting and purging—convulsive contractions, [cramp]—stoppage of urine—suffocative asthma—coma somnolentium—illiac passion—atrophia—spots, exanthemata—fluxes with or without blood"—every symptom ever seen in any stage of the Cholera. These are their terms used, some giving one class of symptoms, and some another; it is not necessary for me to copy out their descriptions in full; the reader will find them in Lind on scurvy.

One says, "It might be a fit task for *Jove* himself to give an accurate account of the scurvy and all its symptoms;" and another makes it "a most universal disease, a calamity

common to all mankind;" while a third enumerates most of the diseases flesh is heir to, or rather *symptoms of disease*, from the illiac passion to the toothache, as proceeding from scurvy. If this be true, Dr. Rush was quite right in declaring disease a unit; and Broussais in locating its seat in the stomach; intelligible now; and Dr. Barnes may well say, this, that, and the other fever, ache, and ailment, are but epi-phenomena of scorbutus; but whether or not it be true of all forms of disease, (which I leave as I find it,) it is God's eternal truth as regards Cholera, if the testimony of all the old authors is reliable, and some of the moderns have not grown wiser.

Dr. Good, who wrote only about thirty years ago, says:

"The precursive symptoms of scurvy are lassitude, faintness, and pains in the limbs. * * * After this there are often shiverings, *nausea* and *vomiting*," (*Study of Medicine, vol. 3, page* 445,) by which it is proved equally true according to reliable modern testimony, that vomiting is common in scurvy.

It is not necessary to pursue the matter farther; those who cannot see the identity of Cholera and scurvy from these quotations, and all the facts I have adduced to prove it, would not be likely to acknowledge it though their patients were to rise from the dead and assert it: they would still probably hold that Cholera is Cholera, and impute its cause to some hypothesis, some poison in the air, rather than to *defective alimentation*, in the rational way I have shown. If fungous gums and fixed genuflexions are the *only* manifestations of scurvy, my theory is fallacious; but if its gastric seat and constitutional vice are acknowledged, my theory stands; for by it every mystery that has enshrouded Cholera is cleared up.

I commend the subject to the consideration of the profession, and respectfully suggest to the medical press that it may not be a lost service to the interests of science and humanity, may not be unworthy of the time and space required to give, at least, a brief synopsis of my views, that readers at large may be advised there is such an explanation of Cholera out. Pronouncing it "simply absurd," as—no matter who has done, does not make it so. The opinion of that cloistered journalist is of no great consequence, perhaps, on a question in practical medicine; but still no one who caters for the medical public in this day, can faithfully discharge his duty as an editor by snubbing investigations into the nature of Cholera, or any other fell scourge. If he can show the fallacy of my theory by the substitution of a more rational one, well and good; if any one in the profession can, let him set about it. The sooner he performs the task,

the better. There is no higher problem for solution. Truth is all I am in search of—the cause of science and humanity my honest and sincere end and aim; and there is but *one* true explanation of Cholera. The endorsement of my views by some of the best minds in the profession is encouraging. What other theory of Cholera ever gained a professional proselyte? Not one. I am told, by here and there a member of the profession, that outside of my views there is no light; and that I can well afford to wait the developments of time in the settlement of the question in the mind of the age. True, but science and humanity cannot—the honor of American medicine cannot—the thousands annually falling victims ought not to be debarred the knowledge of a rational prophylaxis. The matter, then, is too important to be cast off with a shrug, and an ugh! or laid on the table with a look of supercilious wisdom; or "damned with faint praise." The question whether or not I have made a discovery, have contributed a positive addition to the sum of human knowledge, must be met. In what way or manner the profession may see fit to settle the question is not for me to say. I respectfully asked the appointment of a commission by the American Medical Association, at their meeting in May last, but the reference was refused, the subject (in the hurry of business I must charitably believe) not being deemed of sufficient importance! So I sent the essay, with the like request, to each of the five chief governments of Europe, and am not without indications that the subject may engage the attention of commissions abroad. No matter where, so the subject comes before a competent commission. In the meantime, I shall continue my researches, and most respectfully invite those physicians into whose hands this pamphlet may fall, and who may think favorably enough of my theory to try it in practice, to address to me the results of their observations.

I ought, perhaps, before I close this Appendix, to say a word on the question mooted in the conclusion of the body of the essay, "Why scurvy is thus modified," and which I said would be a subject for future reflection. I think I have now shown that the choleric phenomena have always been symptoms of scurvy, or for the last three hundred years, at all events. I have shown too that the symptoms of scurvy have been inconstant throughout this long period; sometimes the gum and leg symptoms being pathognomonic of it, and sometimes the watery fluxes of the belly—vomiting and purging. I have shown too, by modern observers, living witnesses, Dr. Ritchie, of Glasgow, and others, that the gum and leg symptoms are often wanting in these days.

Eugalenus explained this, "it often killed the patient before these symptoms appeared," and he puts down in italics, "*the Cholera morbus*" as a manifestation of scurvy; tells us how a vomiting may be known to be scorbutic, describing the kind or mode of vomiting peculiar to epidemic Cholera accurately; and Vander Mye, the Dutchman, describes an epidemic manifestation of scurvy, characterized by vomiting and purging scorbutic fluids, "pathognomonic of scurvy" —fluids exactly resembling rice water Cholera discharges; developed under summer heat in the besieged city of Breda—a *fac simile* of an epidemic of Asiatic Cholera, out and out:

"The States of Holland had taken care to provide this city for a siege with rye, cheese, and dried fish, [Cholera provisions]. The cheese and fish had, at times, been changed, but their stock of rye not for thirty years. [Hear, hear!] Thence it was become quite spoiled and musty."—(*Lind on scurvy, second edition, page* 241.)

The city was held in a state of famine ten months by the siege, and when summer heat came on, the scurvy having been epidemic two or three months, the scorbutic watery flux, *alias* Cholera, broke out, and eclipsed all other top symptoms, proving so mortal, that the doomed city was forced to capitulate about midsummer. It appears to me that after this exposition, there is not much modification of scurvy to be explained, as it appears now-a-days in Cholera. It was pretty much the same thing in Dutch then that it now is in English; and until it can be shown that some other remedies are more efficacious than the anti-scorbutics I have recommended, viz., lemon juice, brandy, morphine, quinine, soda powders, etc., I respectfully commend the administration of them to practitioners—acids, tonics, astringents, opiates, and stimulants, are the rational remedies, followed up quickly with wholesome nutrition. Until, then, my theory is disproved, and shown to be fallacious by the substitution of a more rational on e (a moral impossibility I trow,) it must stand as the true explanation of Cholera, to the great joy of the profession, and all mankind.

ADDENDA.

Extract from Bisset's Treatise on Scurvy.—"The companies of ships of war," says Bisset, "in their passage to *Jamaica*, being advanced near the tropic, the solid fibres chiefly at the surface of the body suffer an extraordinary expansion, and consequent relaxation; and the fluids are rarified: an effect being produced similar to that of the dry bath, by the sudden increment of the solar heat. As they advance more southerly a propensity to sweating increases; the veins, however, at length begin to subside, the circulation slackens, the complexion fades, the appetite is a little impaired, the strength and

sweating diminish, and the first symptoms of scurvy appear. As they advance further in their passage the symptoms are aggravated, the sweat becomes viscid and scanty, and can be forced now only by hard labor, or the heat of the *orlope* air; and when these causes cease, is quickly dried up. About this time some continued and remitting fevers often appear. These are fatal only as commonly terminating in the most swift and fatal species of the scurvy. If a ship makes a quick summer passage to *Jamaica*, the crew will not be liable to the disease; yet, if ordered out upon a long cruize before *November* following, the scurvy will probably appear, especially if they are invaded by the bilious fever. After *October* it will seldom appear epidemical, especially if they arrived soon after the vernal equinox; for the scurvy seldom appears in the *West Indies* in the winter. Negroes, Creoles and seasoned Europeans are not obnoxious to the bilious fever, and seldom to the scurvy. * * * * * * * * * * * *

"The fifth species, the most malignant and fatal, is commonly preceded by a continued or remitting fever, and sometimes the second and third species degenerate into it, especially if supervened by any degree or species of fever. It is attended sometimes with a slow, continued, remitting or irregular intermitting fever and drought. Its progress is swift. It is sometimes formed by a complication of the scurvy, with the cachexy from an intermittent; and it is generally this species which succeeds fevers at sea. Two cases occurred wherein the *diuresis* was much impaired, with thick, turbid urine, and sometimes a spurious *ischuria;* in both the disease quickly increased with profuse hemorrhages at times from the nose. Such hemorrhages, however, do not often occur, a cough scarce ever, nor any considerable *dyspnœa* in the scurvies in the *West Indies*: nor did the author ever see one case of luxuriant spongy flesh arising from the gums.

"Persons under a manifest scurvy are not invaded with the bilious fever; yet this fever often attacks them when highly predisposed to the scurvy, as also when recovering from it, in both cases proving very fatal."—(*Lind p.* 450.)

Extract from Dr. Cook's Letter.—"When I came home to this country," says Dr. Cook, "I found the denomination of *nervous disorders* universally applied to most chronic and cachectic ailments. Upon examining those complaints in the lower sort of people, who live entirely on the farines and a gross diet, I observed they had a universal lassitude, pains which they termed *rheumatic* flying through their body, and a breathlessness upon using exercise. The legs were sometimes swelled, and the *abdomen* almost always tense and tumified. But whether they had swelling or not, they had generally an ill-colored scorbutic complexion, and were listless and inactive to a great degree, with complaints of pains in their jaws, teeth, etc. I made no scruple to pronounce such cases scorbutic; and by proper anti-scorbutic regimen, medicines, diet, and exercise, seldom failed to give very sensible relief. I have disobliged many patients by saying they had the scurvy; a disease as hateful as it is unknown in this part of the world; but the relief they obtained from anti-scorbutics soon convinced both them and myself that their cases were not mistaken."—(*Account of the scurvy in Russia, Ibid, page* 281.)